PROPOSED

COVERED SOURCE PERMIT REVIEW
COVERED SOURCE PERMIT No. 0244-01-C
MODIFICATION APPLICATION No. 0244-02
PERMIT RENEWAL APPLICATION No. 0244-03

Applicant:	Tileco, Inc.
Facility:	384 TPH Stone Processing Plant, and Hollow Concrete Block Plant
Equipment Location:	91-209 Hanua St., Campbell Industrial Park, Kapolei, Oahu
UTM Coordinates:	2,356,761 North; 592,906 East (Old Hawaiian Datum, updated by applicant 11/98)
Responsible Official:	Dennis I. Sakamoto President (808) 682-5737
Consultant:	Jim Morrow Environmental Management Consultant (808) 942-9096
Point of Contact:	Ken Kumasaka Assistant Manager (808) 682-5737
Mailing Address:	91-209 Hanua St. Kapolei, Hawaii 96707

Background and Proposed Process:

Tileco is an existing facility, currently permitted under Covered Source Permit (CSP) No. 0244-01-C for their 384 TPH stone processing plant and hollow concrete block manufacturing plant. This permit was issued on August 4, 2000 and will expire on August 1, 2005. The equipment at the facility consists of the following:

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Table 1 – Existing Stone Processing and Concrete Block Manufacturing Equipment

Equipment Description	Size	Fuel	Model	Serial No.	Manufacture Date	Max. Design Capacity
Stone Processing						
Lippman (Primary) Jaw Crusher (operating 3" opening)	24" x 36"	---	Grizzly King, Extra Heavy Duty	NV	1947	384 TPH
Hazemag (Secondary) Impact Crusher [4]	NV	---	ASPM-1013	NV	1985	170 TPH
Canica (Tertiary) Crusher	NV	---	45VSI	NV	1999	50 TPH
Thunderbird Vibrating Screen (operating 3/16"opening)	5'x16' (3-deck)	---	5163.3	NV	1996	443 TPH[1]
Various Conveyors	NV	---	NV	NV	NV	NV
Sand Plants (subcategory of Stone Processing)						
Thunderbird Wet Screen (operating 3/32" opening)	3'x10' (2-deck)	---	3102.25-08	NV	1987	99 TPH[2]
Thunderbird Wet Screen (operating 3/32" opening)	4'x12' (2-deck)	---	4122.4-12-D0072	10135-1	1999	159 TPH[3]
Pioneer Twin Roll Crusher (operating 1/8" opening)	18" 2416	---	NV	NV	1980	94 TPH
Eagle Material Washer	18 x 25	—	NV	NV	1989	NV
Ortner Sandwasher	NV	---	3000	NV	NV	125 TPH
Concrete Block Manufacture						
Colombia Concrete Mixer	3 yd^3	---	81	4-8201B	1972	30 yd^3/hr
Colombia Concrete Mixer	3 yd^3	---	81	M9-7212	1981	30 yd^3/hr
Columbia Block Machine	3 yd^3	---	16HF	11-8023B	1979	10 batches/hr
Columbia Block Machine	3 yd^3	---	1600	5-9101G	1991	10 batches/hr
Cement Silo	NV	---	NV	NV	1972	NV
* Johnson Curepak Steam Generator	5.0 MMBtu/hr	LPG	SP 5000	7064EV	1991	54.6 gal/hr
* Johnson Curepak Steam Generator	3.6 MMBtu/hr	LPG	SP 3500	7055EV	1994	39.3 gal/hr
Control devices						
Dustvent Cyclone with After Filter Baghouse	NV	---	35D-20	16-100-400	1986	NV
Dusty Dustless Baghouse servicing Cement Silo [4]	NV	---	NV	NV	1980	NV
Breathing bags servicing Concrete Mixers and Cement Scales	NV	---	NV	NV	1972	NV
Water sprays	NV	---	NV	NV	NV	NV

Notes: * Denotes insignificant activities.
NV = not available.
[1] Based on Thunderbird screen capacity formula assuming product of (A-J) of 5.53 and size of 80 ft^2.
[2] Based on Thunderbird screen capacity formula assuming product of (A-J) of 3.31 and size of 30 ft^2.
[3] Based on Thunderbird screen capacity formula assuming product of (A-J) of 3.31 and size of 48 ft^2.
[4] To be replaced with new equipment, pending modification of the permit.

Power for plant operations is supplied by the local power grid. The facility also includes some paved and unpaved roadways and a paved yard area.

The facility's general nature of business is the manufacture of hollow concrete blocks. The operations that support this function include stone processing, concrete batching and steam production. Therefore, the Standard Industrial Classification (SIC) code for the facility is 32, "Stone, Clay, Glass, and Concrete Products."

The actions being evaluated by this review are the following:

a. Modification Application No. 0244-02. An application for a minor modification of the covered source permit for was submitted on July 22, 2004. The application proposed the replacement of the Dusty Dustless Baghouse dust filter servicing the cement silo with a new, larger filter unit (Griffin Model 54-KS Dust Collector). On August 9, 2004, pursuant to Hawaii Administrative Rules (HAR) Chapter 11-60.1-82(k), the Department of Health granted written permission to the applicant to install and operate the new air pollution control device prior to issuing a formal amendment to the covered source permit.

   On December 8, 2004, the applicant amended the application for the permit modification. The applicant proposes to replace the 170 TPH Hazemag secondary impact crusher with a 200 TPH Northwest Crusher Technologies (Northwest) impact crusher. This proposed action is considered a significant modification of the covered source permit.

Table 2 - Proposed New Equipment

Equipment Description	Size	Model	Serial No.	Manufac-ture Date	Max. Design Capacity	Replaces
Northwest Crusher Technologies Secondary Impact Crusher	(on order)	No. 6	(on order)	(on order)	200 TPH	Hazemag (Secondary) Impact Crusher
Griffin Environmental Co. Baghouse filter for cement silo	54 bags; 375 s.f. cloth area	54-KS	No. 36337	August 2004	0.99856 filtration efficiency	Dusty Dustless Baghouse

b. Permit Renewal Application No. 0244-03. An application for the renewal of CSP No. 0244-01-C was submitted on July 29, 2004. Renewal of the permit will grant authorization to operate the equipment at the facility, including the equipment authorized by the modification, for another five years.

Issuance of this permit modification and renewal will supersede Covered Source Permit (CSP) No. **0244-01-C** in its entirety.

Stone Processing Plant:

Most of the coral material and sand used by the facility comes from Nanakuli. Another source is the dredged material stockpile at the Kalaeloa (Barbers Point) Deep Draft Harbor. Delivery trucks deposit the material in a stockpile at the facility, which is wetted down by either a lawn sprinkler or mist sprayers. A front-end loader dumps coral rocks, approximately 1.5 to 6-inch diameter, into the feeder of the Lippman (primary) jaw crusher. The maximum production rate for this 24" x 36" crusher is 384 TPH. The present closed side setting for the crusher is 3" which

represents a process rate of 116 TPH. This maximum process rating is based on straight through processing to a storage pile with no downstream limitations. The material passing through the jaw crusher goes to the Thunderbird 3-deck vibrating screen where typically 15% goes passes through the three screens and is stockpiled. The remaining 85% (50% secondary, 35% tertiary) of the material is then conveyed to the Hazemag secondary impact crusher (proposed to be replaced by the Northwest impact crusher), or to the Canica VSI (vertical shaft impactor) tertiary crusher (manufactured in 1999).

Material coming off the bottom two decks (~35%) is conveyed to the tertiary crusher before being re-circulated back to the Thunderbird 3-deck vibrating screen. The other 50% of the large material coming off the top screen is re-circulated to the secondary crusher and then back to the screen. After several passes, the material runs through the closed circuit system to produce a fine material (<1/4") and a coarse material (1/4"- 3/8") for stockpile.

Re-circulation of the material in effect can limit the actual throughput because an estimated 85% of new material passes through the secondary and tertiary crushers several times. Based on 1993-1998 data, the average material production rate was 15-21 TPH. Recycled plant waste, such as cull blocks and plant sweepings of approximately 3 tons per day, are added to the process volume. A water misting system, cyclone dust collector with baghouse, and connecting covered conveyors are used to minimize dust from the rock processing operations.

Sand Plant:

The existing sand washing process begins with the movement of moist aggregate from the fine material stockpile into a hopper by front-end loader. The fine material is then sent on to a Thunderbird (3'x10') wet screen and Eagle material washer. The oversized chips that do not pass through the screen are conveyed to a coarse material stockpile. The sand washer conveys the material through a tub of water where the fines float out to a sump. The clean sand is discharged onto a conveyor and stockpiled. The washed sand is used to make mortar and cement blocks.

The sand washing process also takes aggregate from the fine material stockpile and feeds it to a Thunderbird (4'x12') wet screen. Fine material passes through to the Ortner Sandwasher, Model 3000, where fines float out with overflowing water. The sand at the bottom exits through a center port, and then to the stockpile. The large chips that do not pass through the Thunderbird Screen in the Ortner sandwashing system are either conveyed to a chip bin or to the Pioneer Twin roll crusher. A re-circulating conveyor moves the roll crusher output back to the wet screening process. The entire sand plant operation is a wet process with minimal expected emissions.

Hollow Concrete Block Plant:

The fine and coarse aggregate and washed sand from the crushing and screening operations are transported by front-end loader into hoppers for the manufacture of concrete blocks. These materials are transferred by belt conveyor to two Columbia concrete mixers that are totally enclosed and equipped with breathing bags. Cement stored in a silo, equipped with its own baghouse, is mixed with water and aggregate. The resulting concrete is conveyed to two block making machines. The freshly formed blocks are sent to the curing kilns.

The Johnson CurePak SP 5000 and Johnson SP 3500 propane-fired steam generators are used to accelerate curing times. The steam generators are started approximately 6 to 10 times per day and run to the atmosphere through the stack mode for approximately 5 to 10 minutes (per Ken Kumasaka of Tileco). When the exhaust temperature reaches the appropriate temperature (300^{o}F), the exhaust gas is injected with water and the hot exhaust/steam is rerouted to the kiln for curing the concrete blocks.

The maximum design capacities of the equipment listed in Table 1 are based on the manufacturers' data and a straight-through process. As indicated, the entire stone processing plant capacity may be limited based on the Northwest and Canica crushers' capacity to receive new and recirculated material. Throughput will vary depending on the amount of material that is initially crushed to size and stockpiled, and the number of times new feed material is required to pass through the secondary and tertiary crushers. New feed material may be processed through the secondary and tertiary crushers several times before producing the fine material required for block manufacturing. Cement is delivered to the silo twice a day.

The facility has two concrete mixers for the hollow concrete block plant. They are each 3 cubic yard capacity units and are capable of maximum production rates of 10 batches per hour, or 30 CY per hour per unit. Emission rates for the batching plant were based on the combined 60 CY/hr concrete mixers' capacity.

Site Visit.

On October 20, 2004, a site visit was conducted at the Tileco facility. Mr. Ken Kumasaka gave me a tour and explanation of the cement block making process (see photos, dated 10/20/04). We also discussed the following:

1. Mr. Kumasaka explained that the facility has increased its operations to 5 days/week, 16 hr/day. (This is about 4,160 hrs/yr. Emission calculations in this review were based on operating 8,760 hrs/yr.) This expanded schedule became necessary after Grace-Pacific stopped manufacturing cement tile blocks. Therefore, all the production of blocks to meet the demand has shifted to Tileco. Tileco recently purchased the property on the east (Diamond Head) side of them which was formerly used by Mutual Welding Co. They also purchased tile-making equipment from Grace-Pacific and will set up expand their operations to increase production. (I later advised Jim Morrow to get pertinent details (make, model, serial nos., etc) of the purchased equipment, so we can transfer the permit to Tileco, if appropriate.)

2. Tileco recently purchased a new Griffin Environmental Co. filter baghouse for controlling PM emissions from their cement silo. The filter unit is already in their warehouse and will be installed shortly. DOH granted permission to Tileco to install the filter assembly on August 9, 2004, while formal authorization for the minor modification is being processed.

3. Mr. Kumasaka indicated that Tileco still intends to replace the Hazemag secondary crusher with a new one. He requested that we process the permit for the new crusher at the same time as we process the modification for the new cement silo filter bag house and for the renewal of the permit. (The application for the secondary crusher was received by DOH on December 8, 2004.)

4. I asked Mr. Kumasaka if Tileco has been getting any complaints from their neighbors about air-borne dust. He indicated that a firm called Southern Wine and Spirits is across the street and downwind from Tileco. Their manager just bought a new, black SUV and has complained about the dust coating his vehicle. Mr. Kumasaka explained that most of the dust is generated by trucks entering and leaving their premises and tracking dirt and dust into the street. Tileco has since then been sweeping the street every morning and watering it down to control the dust.

Air Pollution Control:

The Dustvent Cyclone dust collector Model 35D-20 with after filter baghouse Model 16-100-400 serves several pieces of equipment (see Table 2 for locations) in the stone processing portion of the plant. The unit pulls suspended dust out of the stone processing system through 15" diameter ducts. All dust collected in the cyclone hopper is transferred to a hose by manually opening a rotary valve. The dust is transferred to a collection bag via the hose. This material is forwarded to the Bond Materials Company for packaging. The cyclone baghouse is cleaned by manually shaking once an hour while operating. Captured dust in the after-filter is removed as needed, about twice per day. The pre-cleaned air from the cyclone goes through the after filter prior to release to the atmosphere.

The cement silo currently uses a Dusty Dustless baghouse to reduce particulate emissions. This will be replaced by the Griffin Model 54-KS filter baghouse, pending the permit modification approval. The Griffin filter assembly consists of 54 bags with a total cloth area of 375 sq. ft. and provides a filtration efficiency of 0.99856, according to the manufacturer. The baghouse has a built-in ¼ hp electric shaker motor that is manually activated prior to cement loading. Periodically, the baghouse is also visually inspected. The lines from the cement silo to each of the two concrete mixers have breathing bags to reduce particulate emissions. These breathing bags service the mixers and cement scales. The breathing bags are attached over the holes (approximately 4" diameter) on the tops of the mixers and stand about 20" tall. The breathing bags are visually inspected for leaks on a periodic basis. The cement silo baghouse and concrete mixer/cement scale breathing bags are replaced annually, or as needed .

Water spray bars are used on the feed material stockpile, radial stacker to fine material stockpile, conveyor to coarse material stockpile, at the material storage area, along a portion of the property fenceline and at the vehicular entrance to the facility. Dust screens are also utilized along parts of the fenceline to prevent fugitive dust from crossing the property lines. A water truck is also employed on site to control fugitive dust emissions generated by stockpiles and vehicle traffic. The paved yard is swept on a daily basis.

Table 3: Stone Processing and Concrete Block Manufacturing Air Pollution Control Equipment

Process Emission Points	Pollutants of Concern	Control Equipment	Control Method Efficiency
Thunderbird vibrating screen Hazemag secondary impact crusher Canica tertiary crusher Conveyor belts to screen Recirculating conveyors	PM, $PM_{10,}$ $PM_{2.5}$	Dustvent Cyclone with After Filter Baghouse	99.9% [manufacturer's data]
Radial stacker to fine stockpile Conveyor to coarse stockpile All material stockpiles (feed, fine, coarse, and sand) and material storage area	PM, $PM_{10,}$ $PM_{2.5}$	Water sprays / Water truck	70% [AP-42 Section 11.19]
Aggregate transfer points not serviced by the baghouse Lippman primary crusher	PM, $PM_{10,}$ $PM_{2.5}$	Water sprays / Water truck	70-(5*n)% where n is # of transfer points downstream of initial application [MDAQMD][a]
Pioneer Twin Roll Crusher	PM, $PM_{10,}$ $PM_{2.5}$	Water (material received by the crusher has been saturated with water in the wet screen)	95%
Material transfer points subsequent to Pioneer Twin Roll Crusher	PM, $PM_{10,}$ $PM_{2.5}$	Water (material exiting the crusher has been saturated with water in the wet screen)	90%
Unpaved roadways	PM, $PM_{10,}$ $PM_{2.5}$	Water truck	70% [AP-42 Section 11.19]
Cement silo	PM, $PM_{10,}$ $PM_{2.5}$	Baghouse	99.86% [Mfg. literature]
Concrete mixers and cement scales	PM, $PM_{10,}$ $PM_{2.5}$	Breathing bags	95% [industry std.]

[a] Control efficiencies obtained from Mojave Desert Air Quality Management District (MDAQMD) Emissions Inventory Guidance for Mineral Handling and Processing Industries (October 31, 1997).

Applicable Requirements:

Hawaii Administrative Rules (HAR):
Chapter 11-59 Ambient Air Quality Standards
Chapter 11-60.1 Air Pollution Control
- Subchapter 1 General Requirements
- Subchapter 2 General Prohibitions
  - 11-60.1-31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-33 Fugitive Dust
  - 11-60.1-37 Process Industries
- Subchapter 5 Covered Sources
- Subchapter 6 Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - 11-60.1-111 Definitions
  - 11-60.1-112 General Fee Provisions for Covered Sources
  - 11-60.1-113 Application Fees for Covered Sources
  - 11-60.1-114 Annual Fees for Covered Sources
- Subchapter 8 Standards of Performance for Stationary Sources
  - 11.60.1-161(25) Standards of Performance for Non-metallic Mineral Processing Plants
- Subchapter 10 – Field Citations

The Dustvent Cyclone has a stack and is thus subject to HAR, Section 11-60.1-37 which requires that hourly particulate emissions are less than the amount determined by the equation $E = 4.10 * p^{0.67}$ where E is the emission rate in pounds per hour and p is the process weight rate in TPH. The process weight rate of the Lippman crusher is 384 TPH, and the emission rate using this equation is 221 pounds per hour. However, no rate of emissions shall exceed forty pounds per hour regardless of the process weight rate. Thus the rule limit is 40 pounds per hour. Since the PM emission rate is less than 40 pounds per hour, the Dustvent Cyclone is in compliance with HAR, Section 11-60.1-37.

New Source Performance Standards:

40 Code of Federal Regulations (CFR) Part 60 - Standards of Performance for New Stationary Sources
- Subpart A - General Provisions
- Subpart OOO - Standards of Performance for Non-metallic Mineral Processing Plants

40 CFR Part 60 Subpart OOO applies to fixed crushed stone plants with capacities greater than 25 TPH that commence construction, reconstruction, or modification after August 31, 1983. Subsequent to the issuance of the PTOs and ATCs for this facility, Subpart OOO was revised to include the definition and particulate matter standards for wet screening operations. All of the facility's sand plants (wet screening operations) have previously been evaluated based on the revised Subpart OOO. Except as provided below, the stone processing plant and sand plants, the Thunderbird vibrating screen, including the conveying systems and wet screen operations are subject to Subpart OOO. The affected facilities also include the proposed Northwest secondary impact crusher. The dates of manufacture for the equipment are shown in Table 1. Subpart OOO is not considered applicable to the Lippman crusher and the Pioneer Twin Roll Crusher since they were manufactured prior to 1983 (in 1947 and 1980, respectively). The Eagle material washer and Ortner sandwasher are not considered affected facilities under subpart OOO.

Prevention of Significant Deterioration (PSD):

HAR Chapter 11-60.1 Air Pollution Control, Subchapter 7 PSD Review

PSD applies to major stationary sources in an attainment area which emit or have the potential to emit 250 TPY (or 100 TPY for named source categories) of any regulated air pollutant, or to such sources making a major modification involving a significant net emissions increase (e.g., 25 tons per year PM, 15 tons per year PM_{10} [HAR 11-60.1-1]). PSD does not apply since this facility is not a major stationary source and the proposed modifications would not result in a significant net emissions increase. Facility-wide PM emissions are summarized below to show the net increase in PM emissions. Detailed calculations are attached to the technical review for reference.

Table 4: Net Increase in Facility-Wide PM Emissions

Description	**PM** (TPY)	**PM-10** (TPY)
Proposed Modified Facility	72.79	30.17
Current Facility	61.62	26.65
Net Increase	11.17	3.52
Significant Levels	25	15

Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is required for new sources or modifications to existing sources that would result in a net significant increase as defined in HAR, Section 11.60.1-1. The net increase in potential emissions due to the new secondary crusher and new filter bag for the cement silo does not reach significant levels for PM and PM_{10}. As such, application of BACT by this facility is not required.

During the initial CSP application, however, BACT was addressed by the applicant by the following practices:

- majority of roads at the facility are paved;
- a water truck is operated on site for spraying of the roads as well as stockpiles during the operation of the plant;
- a cyclone with after filter baghouse collection system is utilized on the majority of the stone processing plant;
- water sprays are located at various transfer points throughout the plant which are not serviced by the baghouse to minimize fugitive emissions from stone processing operations; and
- baghouses are utilized to collect particulates from the cement silo, mixers, and cement scales.

Control of particulate emissions utilizing baghouses and water suppression was considered the most feasible alternative for meeting BACT requirements for fugitive emissions for this source.

National Emission Standards for Hazardous Air Pollutants (NESHAP):

40 CFR Part 61.

The facility is not subject to any NESHAP as there are no applicable standards in

40 CFR Part 61.

Maximum Available Control Technology (MACT) Standards:

40 CFR Part 63

The facility is not subject to any MACT Standards since the facility is not a major source of hazardous air pollutants and does not belong to a source category for which a standard has been promulgated under 40 CFR Part 63.

Compliance Assurance Monitoring (CAM):

40 CFR Part 64

Applicability of the CAM Rule is determined on a pollutant specific basis for each affected emission unit. Each determination is based upon a series of evaluation criteria. In order for a source to be subject to CAM, each source must:

1. Be located at a major source per Title V of the Clean Air Act Amendments of 1990;
2. Be subject to federally enforceable applicable requirements;
3. Have pre-control device potential emissions that exceed applicable major source thresholds;
4. Be fitted with an "active" air pollution control device; and
5. Not be subject to certain regulations that specifically exempt it from CAM.

Emission units are any part or activity of a stationary source that emits or has the potential to emit any air pollutant.

Since the facility is not a major covered source, the facility is not subject to CAM. However, periodic monitoring/inspection will be required to ensure that the active control devices, i.e., Dustvent cyclone with baghouse, cement silo baghouse, concrete mixer and cement scale breathing bags, and water sprays, are working properly.

Consolidated Emissions Reporting Rule (CERR):

40 CFR Part 51, Subpart A - Emission Inventory Reporting Requirements, determines CER based on facility wide emissions of each air pollutant at the CER triggering levels shown below.

This facility does not have any emissions at the CER triggering levels. Therefore, CER requirements are not applicable. (See Table 5, below)

Compliance Data System (CDS):

Applicability of CDS reporting looks at emissions on a facility-wide basis and whether or not the facility is a covered source. Compliance Data System (CDS) is an inventory system used to track covered sources subject to annual inspections and its requirements are applicable to all covered sources. As a covered source, the facility remains a CDS source and is subject to annual emissions reporting.

Compliance Data System (CDS) is an inventory system used to track covered sources subject to annual inspections. This source is subject to CDS because it is a covered source.

In-House Emissions Reporting:

Although CER for the facility is not triggered, the Clean Air Branch requests annual emissions reporting from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels. Annual emissions from these facilities are used within the Department and are not inputted into the AIRS database. Total combined facility emissions exceed the in-house triggering level for PM (68.81 TPY) and for PM-10 (28.55 TPY); therefore, annual emissions reporting required for in-house recordkeeping purposes. (See Table 5, below)

Table 5 - Maximum Emissions Compared to Significant Levels, CER, and "In-house" Thresholds (All Values in TPY)

Pollutant	Emissions (TPY) (8,760 Hr/yr)	Signi-ficant Levels (TPY)	CERR Triggering Levels (TPY)		"In-house" Reporting Levels (TPY)
			1-Year Cycle (Type A Sources)	3-year Cycle (Type B Sources)	
NOx	5.76	40	≥ 250	≥ 100	≥ 25
CO	0.78	100	≥ 2500	≥ 1000	≥ 250
SO2	0.55	40	≥ 2500	≥ 100	≥ 25
PM-2.5	9.79	--	--	--	--
PM-10	30.17	15	≥ 250	≥ 100	≥ 25
PM	72.80	25	--	--	≥ 25
VOC	0.21	40	≥ 250	≥ 100	≥ 25
HAPs	4.13E-04	--	--	--	≥ 5

Insignificant Activities/Exemptions:

The table below summarizes the facility's insignificant activities and basis for exemption.

Table 6 - Insignificant Activities

Equipment	Size	Exemption Basis	Comment
Unleaded gasoline fuel tank	1,000 gallon	HAR 11-60.1-82(f)(1)	< 40,000 gallons, organic liquids
Propane fuel tanks (2x)	2,000 gallon	HAR 11-60.1-82(f)(1)	< 40,000 gallons, organic liquids
Johnson Curepak SP 3500 steam generator	3.6 MMBtu/hr	HAR 11-60.1-82(f)(3)	< 5 MMBtu/hr, LPG
Johnson Curepak SP 5000 steam generator	5 MMBtu/hr	HAR 11-60.1-82(f)(7)	Case specific determination, negligible emissions

The storage tanks are exempt from permitting based on HAR 11-60.1-82(f)(1) which exempts: "Any storage tank, reservoir, or other container of capacity equal to or less than forty thousand gallons storing volatile organic compounds, except those storage tanks, reservoirs, or other containers subject to any standard or other requirement pursuant to Sections 111 or 112 of the Act." The tanks listed above are too small to be subject to any regulations promulgated pursuant to Sections 111 or 112 of the Act.

The 3.6 MMBtu/hr LPG steam generator is exempt from permitting based on HAR 60.1-82(f)(3) which exempts "Steam generator, steam superheaters, water boilers, or water heaters, all of which have a heat input capacity of less than five MMBtu/hr, and are fired on (A) natural or synthetic gas; (B) liquefied petroleum gas; or (C) a combination of natural, synthetic, or liquefied petroleum gas."

It is recommended that the 5 MMBtu/hr LPG steam generator be considered an insignificant activity based on HAR 60.1-82(f)(7) which exempts '"Other activities as determined on a case-by-case basis." The rated capacity is near the exemption threshold and its potential to emit is less than 3.3 TPY for any regulated pollutant at 8,760 hours per year of operation. The maximum projected operation of the plant is 4,200 hours, which equates to less than 1.6 TPY.

Previously, a 70 HP diesel engine was proposed to be used to temporarily run the water pump for the new sand plant until an electric motor is installed and running. The entire facility is now operated with commercial electric power, and the diesel engine was excessed.

Alternate Operating Scenarios:

There were no new alternate operating scenarios proposed in the application for the modification or renewal of the covered source permit.

Project Emissions:

The application indicated that the facility typically operates 8 hours/day, 5 days/week, or about 2,080 hours per year. During the October 20, 2004 site visit, the plant manager explained that the facility has increased its operations to 5 days/week, 16 hr/day, or about 4,160 hrs/yr. Emissions were calculated in this evaluation based on continuous operations of 8,760 hours per year.

The majority of emissions are fugitive in nature, where the main pollutant is particulate matter emitted from rock crushing and screening operations, from concrete batching, and from aggregate stockpiles and vehicle traffic on unpaved roads within the facility. The remainder of the emissions primarily result from the firing of two LPG boilers for steam generation (insignificant activity). Emissions from sand washing are included stone processing.

Rock Crushing, Screening and Sand Plant Operations. The maximum potential emissions were calculated assuming the maximum rated capacity of the equipment in the facility, including the 384 TPH Lippman (primary) crusher, the proposed Northwest 200 TPH (secondary) crusher, the 50 TPH Canica (tertiary) crusher, the 443 TPH Thunderbird vibrating screen, the 99 and 159 TPH Thunderbird wet screens, the 94 TPH Pioneer Roll Crusher, the 125 TPH Ortner sandwasher, and continuous operations of 8,760 hours per year

Emission control efficiencies are applied at transfer points based on the Mojave Desert Air Quality Management District (MDAQMD) Guidelines (October 1997). At the point of water spray application, 70% control is assigned. At each subsequent transfer point, a factor of (70-5n)% is assigned where n is the number of points downstream of the initial application. A control efficiency of 99.9% (per manufacturer data) was used for the Dustvent cyclone with after filter baghouse, 99% for the cement silo baghouse, and 95% for the mixer and cement scale breathing bags.

PM emissions from these operations are summarized in Tables 7 and 8, below, and detailed calculations are shown in enclosure (1).

Table 7 - Rock Crushing, Screening, and Sand Plant Emissions

Process (Operating 8,760 hr/yr)	Emissions (TPY)		
	PM-2.5	PM-10	PM
Rock Crushing	2.686	6.84	17.91
Sand Plant	0.481	1.19	3.20
TOTAL	**3.167**	**8.03**	**21.11**

AP-42, Chapter 11.19.2 (8/04), Crushed Stone Processing

Concrete Batching. Maximum potential emissions were calculated assuming the maximum production rate of 60 cubic yards/hr (two 30 CY/hr Colombia mixers), and continuous operations of 8,760 hours per year. Based on an average of 4,024 lb/CY of concrete, a production rate of 60 CY/hr, and a typical mix as tabulated below, the material rates of each component in the mix were calculated as follows:

Component	Weight (lbs/CY) [a]	Percent	Process (T/hr)
Cement & Supplement	564	14.0%	16.8
Sand	1428	35.5%	42.6
Aggregate	1865	46.3%	55.6
Water (20 gal)	167	4.2%	5.0
Totals	4024	100.0%	120.0

[a] AP 42, Chap 11.12 Concrete Batching (10/01)

Based on these rates, emissions were calculated (enclosure (2)) and summarized below:

Table 8 - Concrete Batching Emissions

Process	Emissions (TPY) (8,760 hr/yr)		
	PM-2.5	**PM-10**	**PM**
Aggregate Transfer	0.08	0.241	0.504
Sand Transfer	0.02	0.056	0.118
Cement Unload Silo	0.08	0.338	0.530
Aggr/Sand Weigh Hopper	0.02	0.052	0.110
Cement Weigh Hopper	0.40	1.692	2.649
Mixer Loading	0.83	1.964	5.541
TOTAL	**1.418**	**4.344**	**9.451**

AP 42, Chap 11.12 (10/01), Concrete Batching

Aggregate Handling and Stockpiles. Maximum potential emissions were calculated assuming the same maximum rated capacities of the crushing and screening equipment at the facility. The mean moisture content of crushed limestone for stone quarrying and processing of 0.7% from AP-42 Table 13.2.4-1 was assumed for the material in stockpiles. All of the stockpiles (coral feedstock, coarse, sand, and fines stockpiles) are controlled with water suppression. Average wind speed of 10.9 mph was assumed in the calculations.

PM emissions from the stockpiles at the facility are summarized in the table below, and detailed calculations are shown in enclosure (3).

Table 9 - Stockpile Emissions

Storage Pile	Emissions (TPY) (8,760 hr/yr)		
	PM-10	PM	PM-2.5
Coral Feed Mat'l	6.76	14.28	2.12
Fines Stockpile	6.43	13.57	2.01
Coarse Stkpile	0.33	0.71	0.10
Sand Stockpile	1.66	3.50	0.52
TOTALS	**15.18**	**32.05**	**4.76**

AP-42, Chap 13.2.4 (1/95), Aggregate Handling and Storage Piles

Vehicle Travel on Unpaved Roadways. Emission calculations were based on unpaved roadways with a 70% control of fugitive dust due to water suppression, silt content of road surfaces of 3.9% (AP-42, 13.2.2, 12/03), facility operating 8,760 hr/year, and the following k, a and b constants, and assumptions for coral and cement delivery trucks:

Constant Values from AP-42, Table 13.2.2-2

	k	a	b
PM-2.5	0.23	0.9	0.45
PM-10	1.5	0.9	0.45
PM	4.9	0.7	0.45

- Coral Delivery — 384 T/hr delivered
  - Truck capacity — 24 T/load
  - Travel dist in facility — 0.09 miles per load (475 ft)
- Cement Delivery — 15 T/hr delivered
  - Truck capacity — 20 T/load
  - Travel dist in facility — 0.038 miles per load (200 ft)

PM emissions from vehicle travel at the facility are summarized in the table below, and detailed calculations are shown in enclosure (4).

Table 10 - Vehicle Travel Emissions

Vehicle	Emissions (TPY) (8,760 hr/yr)		
	PM-2.5	PM-10	PM
Coral Del. Trucks	0.37	2.40	9.82
Cement Del. Trucks	0.01	0.05	0.20
TOTAL	**0.38**	**2.45**	**10.02**

AP-42, Chapter 13.2.2, (12/03), Unpaved Roads

Steam Generators (Boilers). The emissions for the Johnson SP 5000 and SP 3500 steam generators were calculated based on a maximum firing 54.6 and 39.3 gal/hr of LPG, respectively, and continuous operations of 8,760 hours per year. The boilers are considered insignificant activities.

Emissions from boilers are summarized in the table below, and detailed calculations are shown in enclosure (5).

Table 11 - Steam Generator Emissions

Pollutant	Emissions (TPY) (8,760 hr/yr)		
	SP-5000	**SP-3500**	**TOTAL**
SO2	0.32	0.23	0.55
NOx	3.35	2.41	5.76
CO	0.45	0.33	0.78
PM	0.10	0.07	0.16
PM-10	0.10	0.07	0.16
PM-2.5	0.04	0.03	0.07
VOC	0.12	0.09	0.21

AP-42, Chap 1.5-1 (10/96), Commercial Boilers (0.3-10 MMBTU/hr)

Other Insignificant Activities. VOC emissions from the fuel tanks have not been included since they are expected to be negligible.

Facility-Wide Emissions. Facility-wide emissions, including those from the insignificant (exempt) steam generators, are tabulated below.

Table 12: FACILITY-WIDE EMISSIONS- 8,760 Hr/yr (TPY)

Pollutant	LPG-fired Boilers (5.0 & 3.6 MMBtu/hr) (Exempt)	Rock Crushing & Screening	Concrete Batching	Stock-pile	Vehicle Travel on Unpaved Roads	**TOTAL EMISSIONS (TPY)**
NOx	5.76	--	--	--	--	**5.76**
CO	0.78	--	--	--	--	**0.78**
SO2	0.55	--	--	--	--	**0.55**
PM-2.5	0.07	3.17	1.42	4.76	0.38	**9.79**
PM-10	0.16	8.03	4.34	15.18	2.45	**30.17**
PM	0.16	21.11	9.45	32.05	10.02	**72.80**
VOC	0.21	--	--	--	--	**0.21**
HAPs	--	--	4.13E-04	--	--	**4.13E-04**

Synthetic Minor Applicability:

A synthetic minor source is a facility that is potentially major (as defined in HAR 11-60.1-1), but is made nonmajor through federally enforceable permit conditions. This facility is not a synthetic minor based on potential emissions that are less than major source levels when the facility is operated at its maximum capacity for 8,760 hours per year.

Air Quality Assessment:

During the review of the initial permit application, an ambient air quality impact analysis was performed for the Dustvent cyclone baghouse which services the stone processing equipment. Since the air vents to the atmosphere from an opening pointing downwards, the cyclone baghouse was modeled as a volume source. The cement silo baghouse and concrete mixers and cement scales breathing bag vents were not included in the analysis because these sources operate on an intermittent basis. The steam generators also were not included in the analysis because they were deemed insignificant activities and the combustion exhaust vents of the kilns were not included because they are only used intermittently.

PM-10 emissions from the Dustvent cyclone baghouse were modeled using EPA SCREEN3. Results of the analysis determined that the combined PM-10 air emissions from the crushing operation and the ambient PM-10 background concentrations were within State and National Ambient Air Quality Standards (AAQS).

The proposed modification at the facility's stone processing plant would replace the 170 TPH Hazemag crusher with a 200 TPH Northwest crusher. Although the new crusher has a higher design capacity, the estimated PM-10 emissions for the rock-crushing operations were lower than previously calculated. This is because the AP-42 emission factors for PM-10 were revised in August 2004 and are for the most part, lower than the earlier (January 95) emission factors. As such, PM-10 emissions from the Dustvent cyclone are lower for the modified facility. Based on this, as well as the previous analysis conducted, another ambient air quality modeling assessment for the modification application is not required.

Existing Significant Permit Conditions:

Condition: The applicant has installed a non-resetting hour meter on the primary crusher to provide a permanent record of the total plant operating hours. Currently, hour meter readings are recorded at the beginning and end of each calendar month and are submitted to DOH in a semiannual monitoring report.

Comment: The facility will need record-keeping for annual emission reporting.

Condition: Annual source performance tests shall be conducted pursuant to the Special Condition. Test summaries and results shall be maintained in accordance with the requirements of this section.

Comment: Various equipment at the facility are subject to 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants. An initial source performance test is required for the new Northwest 200 TPH impact crusher pursuant to Subpart OOO for the measurement of particulate matter concentration and opacity. An annual source performance test is a State requirement to help ensure the facility is operating in compliance with the AAQS.

Condition: 40 CFR Part 60 Subpart OOO provisions are applicable to the following: Northwest secondary impact crusher, Canica tertiary crusher, Thunderbird vibrating screen, Thunderbird wet screens, and conveyors. The permittee shall comply with all applicable provisions of these standards, including all emission limits and all notification, testing, monitoring, and reporting requirements.

Purpose: To specify equipment subject to 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants.

Condition: The permittee shall not cause to be discharged into the atmosphere from any transfer point on the belt conveyors, or from any other point subject to an opacity limit,, any fugitive emissions which exhibit greater than ten (10) percent opacity. Emissions from the Dustvent cyclone after filter baghouse servicing the stone processing plant shall be considered fugitive and subject to this limit.

Purpose: This condition is required by NSPS (40 CFR 60.672(b)). Previously, EPA Region 9 advised that emissions from the Dustvent cyclone after filter baghouse may be considered fugitive due to its physical configuration. Requirements for bi-monthly inspections of this unit have also been incorporated into the permit to ensure proper operation and control of particulate matter from the unit.

Condition: The permittee shall not cause to be discharged into the atmosphere any visible emissions from wet screening operations and subsequent belt conveyors that process saturated material in the production line up to the next crusher or storage bin.

Purpose: This condition required by NSPS (40 CFR 60.672(h)).

Conclusion:

The applicant operates a stone processing and hollow concrete block plant with a 384 TPH primary rock crusher, a new 200 TPH secondary crusher, and a 50 TPH tertiary crusher. The facility also operates sand screening and washing equipment, concrete mixers, a cement silo, cement block fabrication machines, and two steam generators.

Air pollution controls at the facility consist of a cyclone with baghouse on the stone processing plant, water spray bars at various locations, and a water truck for use on stockpiles and on facility roadways. Additional air pollution controls include the use of a baghouse on the cement silo and breathing bags on the concrete mixers and cement scales.

The applicant proposes a modification to:

a. Replace the baghouse on the cement silo, and
b. Replace the secondary crusher.

The modeling analysis for the stone processing plant cyclone with baghouse was conducted during the review of the initial permit application no. 0244-01 and demonstrated compliance with State and Federal AAQS.

The facility-wide emission estimates summarized in Table 12 are conservative for two reasons.

1) The estimates are based on the maximum capacity of each piece of equipment (384 TPH Lippman primary crusher, 200 TPH Northwest secondary crusher (proposed), 50 TPH Canica tertiary crusher, 443 TPH Thunderbird vibrating screen, 99 and 159 TPH Thunderbird wet screens, 94 TPH Pioneer Twin Roll crusher, 30 cy/hr Columbia mixers, and the steam generators, 54.6 and 39.3 gal/hr). These maximum capacities are significantly greater than the average historical throughput of the facility of approximately 20 TPH, according to the applicant.

2) The emissions were calculated based on continuous operations of 8,760 hours per year, while the facility typically operates about a maximum of 4,160 hours per year

Thus, the emissions presented in Table 12, as calculated using the maximum equipment capacities and 8,760 hours/year operations, display calculated potential emissions significantly greater than the predicted actual emissions.

PROPOSED

Issuance of a Renewal and Modification of the Covered Source Permit is recommended based on the review of the information provided by the applicant and subject to the significant permit conditions, public comments, and EPA review.

Reviewer: WK, 1/31/05

PROPOSED

Permit History

Permit No.	Concrete Block Plant Equipment	Issue Date
P-391	Holllow Tile Plant	1980
P-199-594	Columbia Hollow Tile Block Machine Cleaver Brooks Boiler	1/25/83
P-14-747	Combined first two permits. Renewal application acknowledged on 7/19/90. Assigned P-14-1093.	7/25/85
P-14-1231	Precast concrete block manufacturing plant. Superceded P-14-747.	1/4/91
A-1153-1030	Replacement of the block machine.	10/25/93

Permit No.	Stone Processing Plant Equipment	Issue Date
A-649-676	100 TPH Primary/Secondary Crusher w/ baghouse and 120 hp diesel engine.	11/17/87
	Permit extended to 9/1/89 and modified to allow the modification of the dust collection filter system to accommodate stack performance test requirements.	9/13/88
	Permit extended to 3/1/90.	8/25/89
	Permit amended to incorporate opacity readings pursuant to Subpart OOO.	11/2/89
	Permit extended to 3/1/91. Permit exteded to 6/1/91.	6/7/90 7/16/90
	Modified to increase operating hours and remove 120 hp diesel engine.	7/1/91
P-649-1292	100 TPH Primary/Secondary Crusher w/ cyclone dust collector and baghouse.	11/5/91

Permit No.	Covered Source Permit	Issue Date
0244-01-C	Application for a covered source submitted 6/6/94. Proposed changes included removing the Cleaver Brooks boiler and adding new equipment. Boiler replaced with a LPG 5.0 MMBTU/Hr. steam generator. Other new equipment included the addition of a tertiary crusher, wet process operation. Power is supplied by the local power grid.	8/4/00

Permit History (continued)

Permit No.	Concrete Block Plant Equipment	Issue Date
0244-02	Modification of CSP 0244-01-C. Application submitted on July 22, 2004 and amended on December 8, 2004.	
0244-03	Renewal of CSP 0244-01-C. Application submitted on July 29, 2004.	